INDUSTRY // LOGISTICS & DISTRIBUTION

Machine vision for distribution centres and dispatch in South Africa

Code readers and cameras where pallets, cartons, totes and parcels change hands: receiving, put-away, packing, sortation and dispatch.

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// SHORT ANSWER

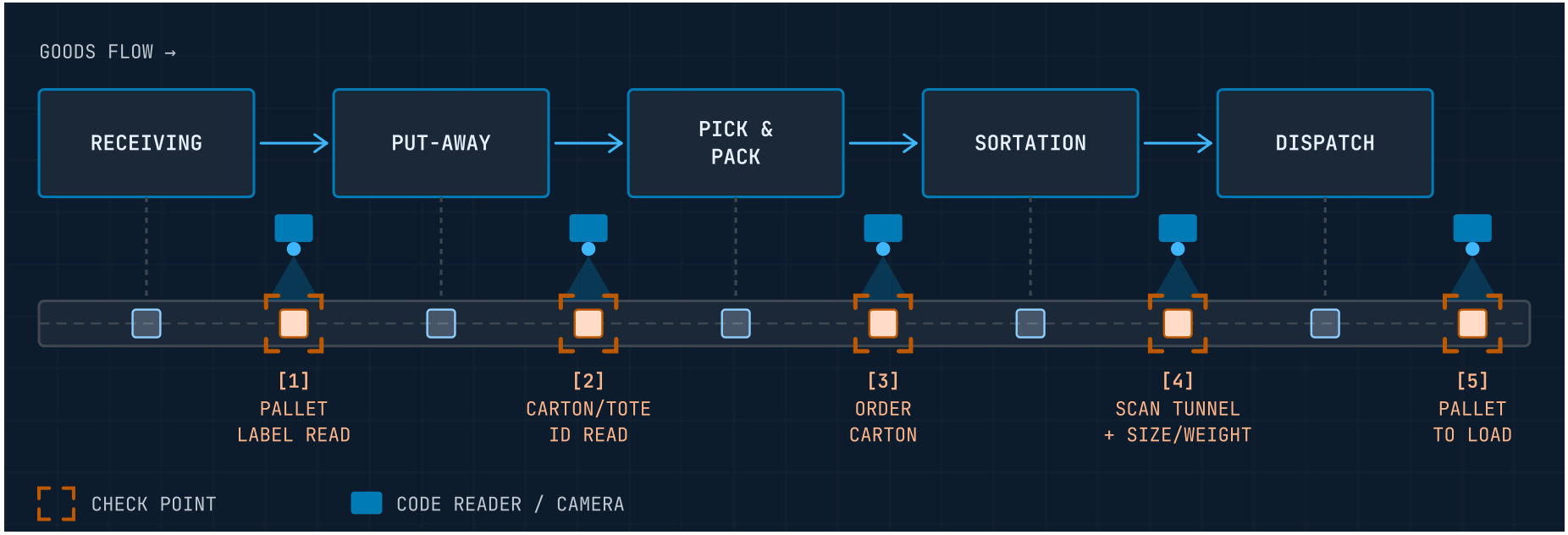
Machine vision in a distribution centre puts fixed code readers and cameras where goods change hands. At receiving and dispatch they read the SSCC on GS1-128 pallet labels and match it to the warehouse system; on conveyors and at sortation a scan tunnel reads every carton in motion and, with a dimensioner and scale, records size and weight. No-reads go to a manual lane. Reading a barcode does not grade its print quality, and size or weight used for billing may need legal-for-trade approval.

// WHERE IT FITS

Check points through a distribution centre

A typical flow for a retail or e-commerce DC; your site may add or skip steps. Each check sits where an unread or wrong label would otherwise travel on.

[Schematic] GOODS FLOW · NOT TO SCALE



[1] Pallet label: SSCC read at receiving and matched to the expected receipt.

[2] Carton or tote ID: read on the conveyor so each item goes to the right location.

[3] Order carton: visible items and the shipping label checked before sealing.

[4] Scan tunnel: every item read in motion, with size and weight where needed.

[5] Pallet to load: pallet labels matched to the load before it leaves the dock.

// DEFECT RISKS

What goes wrong at each step

Faults by step, from the supplier’s end of line to the dispatch dock, and the page that covers the check.

STEP	TYPICAL FAULTS	INSPECTION
Supplier end of line	Case or pallet labels that do not scan, or carry the wrong content, so goods are held or turned away at the receiving dock	**Carton & pallet verification**
Receiving	Missing, torn or unreadable pallet label; an SSCC the warehouse system does not expect	**Carton & pallet verification**
Put-away and storage	Carton or tote label not read on the conveyor, so the item stops or goes to the wrong location	**Choosing a code reader**
Picking and packing	Shipping label missing, on the wrong carton or out of step with the order; a visible item missing from an open carton	**Carton & pallet verification**
Sortation	No-reads, codes unknown to the warehouse system, two touching items read as one, items out of size	**Scan tunnel & dimensioning**
Dispatch	Pallet label on the wrong pallet, two labels on one pallet that disagree, a pallet staged for the wrong store	**Carton & pallet verification**

// INSPECTIONS

Checks that apply in logistics and distribution

In a DC the main job is identification: reading the right code on every item and passing it to the warehouse system or sorter. Counting and label checks apply where items are still open or labels are on known faces.

Scan tunnel & dimensioning

Readers around the conveyor read the label on any covered face; a dimensioner and scale add size and weight.

`At: induction and sortation`

Scan tunnel & dimensioning →

Carton & pallet verification

Case and pallet labels read and matched to the order or load held by the warehouse system.

`At: packing and dispatch`

Carton & pallet verification →

Tyre barcode reading

Fixed readers read the label on every tyre on the conveyor and divert no-reads.

`At: tyre warehouses and DCs`

Tyre barcode reading →

Barcode verification & grading

Why a reader confirms content while only a verifier grades print quality to GS1 levels.

`At: the label printer`

Barcode verification & grading →

`// APPLICATION MAP`

Distribution inspection scenarios by item

Common items in South African distribution centres and dispatch areas, what a reader or camera checks on each, and the page with the detail. The method in each row is a starting point, confirmed on your own items and labels. Weight for billing, contents of sealed cartons and RFID tags need other equipment.

ITEM / POSITION	WHAT IS CHECKED	TYPICAL FAULT CAUGHT	METHOD	RELATED PAGE

ITEM / POSITION	WHAT IS CHECKED	TYPICAL FAULT CAUGHT	METHOD	RELATED PAGE
Inbound supplier pallets at the receiving dock	SSCC on the pallet label	Missing or unreadable label; an SSCC the warehouse system does not expect	Fixed code reader at a defined pallet stop; the read SSCC is checked against the expected receipt	**Carton & pallet verification**
Cartons on the inbound conveyor at induction, after decanting	Carton barcode on whichever face it is	No-read; label on a face the station does not cover	Logistics readers on several sides of the belt; a line-scan reader across the top	**Scan tunnel & dimensioning**
Plastic totes on the tote conveyor to and from pick stations	Tote ID label on its fixed face	Dirty, scratched or missing tote label; tote sent to the wrong station	One fixed reader aimed at the known label face, triggered per tote	**Choosing a code reader**
Order cartons after packing, before sealing	Items visible from above in the open carton; the shipping label	A visible item missing; a label for another order	Overhead camera on the open carton; label read and matched to the order in the warehouse system	**Carton & pallet verification**
Parcels and polybags at sorter induction	Barcode on any covered face; length, width, height and weight	No-read, two touching items, an item out of size; glare and creases on polybag labels	Scan tunnel with a 3D dimensioner and a scale; soft items measured on samples first	**Scan tunnel & dimensioning**

ITEM / POSITION	WHAT IS CHECKED	TYPICAL FAULT CAUGHT	METHOD	RELATED PAGE
Mixed store pallets at dispatch, before loading	Pallet labels on the agreed faces; both labels carry the same SSCC	Label on the wrong pallet; two labels that disagree; pallet for the wrong store or load	Readers at a pallet stop, reads matched to the load held by the warehouse system	**Carton & pallet verification**
Tyres on the tyre conveyor in a warehouse or DC	Barcode label on the tyre	No-read, code unknown to the warehouse system, tyre on the wrong lane	Several fixed readers around the tyre; no-reads diverted	**Tyre barcode reading**
Shipping cases from a factory at the supplier's end of line, before the DC	Case label decodes with the right content; print quality on samples	Labels that will not scan at the receiving dock	In-line reader on every case; a verifier at the printer for the GS1-128 print grade	**Barcode verification & grading**

// SOUTH AFRICA

South African DCs and the GS1 logistic label

Where goods are identified, what the GS1 rules require on case and pallet labels, and which parts a reader can check.

Retail goods in South Africa move through large central distribution centres. The Shoprite Group reports 29 distribution centres with over 900 000 m² under roof, and its Riverfields DC in Gauteng serves over 500 stores (Shoprite fact sheet). In a DC of that kind every pallet, carton and tote is identified by barcode several times between receiving and dispatch, so a label that will not scan costs time at each step.

No South African rule requires a camera or a scan tunnel in a DC. The rules that matter are the GS1 standards for logistic labels, which suppliers and DCs work to:

- **SSCC:** the Serial Shipping Container Code identifies one logistic unit, such as a case or a pallet (GS1 SSCC). It is the single mandatory element on every GS1 logistic label, carried in a GS1-128 barcode (GS1 General Specifications, 2026). It is the number a receiving or dispatch check matches against the warehouse system.
- **Minimum print quality:** the GS1 General Specifications set 1.5/10/660 for barcodes in general distribution, such as ITF-14 and GS1-128, where grade 1.5 corresponds to ISO grade C (GS1 General Specifications, 2026). Grading to that level needs a verifier; an in-line reader confirms that the code decodes with the right content.
- **Label placement:** the GS1 Logistic Label Guideline gives placement and verification recommendations for logistic units (GS1 Logistic Label Guideline). For a fixed reader, what matters is that every pallet carries its labels on the same faces.
- **Listing:** GS1 South Africa tests barcodes to ISO/IEC 15416 and states that many retailers require its barcode test report when a product is listed (GS1 South Africa).

Size and weight used for billing

A dimensioner and a scale record size and weight against each code. Where measured weight or volume is used to charge a customer, legal metrology may require approved, legal-for-trade equipment. addaScan does not claim that approval for any device on this site; confirm it before dimension or weight data is used for billing.

SOURCES FOR THIS SECTION

1. Shoprite Holdings fact sheet: supply chain and the Riverfields DC (https://www.shopriteholdings.co.za/docs/fact-sheet-shoprite-supply-chain-riverfields-dc.pdf) (company fact sheet, checked 2026-10-02)
2. GS1: Serial Shipping Container Code (SSCC) (https://www.gs1.org/standards/id-keys/sscc) (standards body page, checked 2026-09-24)
3. GS1 General Specifications 2026: logistic label (SSCC, GS1-128) and minimum symbol quality (https://gs1za.org/wp-content/uploads/2026/05/GS1-General-Specifications-2026.pdf) (standard, read 2026-09-25)
4. GS1 Logistic Label Guideline (https://www.gs1.org/standards/gs1-logistic-label-guideline) (standards body page, checked 2026-09-24)
5. GS1 South Africa: barcode verification service (https://gs1za.org/solutions/barcode-verification-service/) (read 2026-09-25)

// INTEGRATION

Conditions specific to distribution centres

These decide whether every item is read once, by the right station, and whether the warehouse system can act on it.

SINGULATION

One item at a time

Each read, measurement and weight must belong to one item, so items need a gap between them. A tunnel can flag two touching items; it cannot separate them.

WE ASK

How items are inducted and spaced

LABEL FACES

Where labels may be

The more faces a label may be on, the more readers are needed. A label on the bottom needs a reader under a split belt.

WE ASK

Which faces carry labels today

ITEM MIX

Cartons, totes, polybags, tyres

Board, plastic film and rubber each reflect light differently; film glare and creased labels are the usual no-reads. Soft items are measured on samples first.

WE ASK

Item types and packaging

SYSTEMS

Warehouse system and sorter

HIKROBOT lists SmartSDK, TCP, serial and FTP for its ID6000 and ID7000

DOCK CONDITIONS

Daylight, dust and traffic

Open dock doors change the light through the day, and forklifts pass close

BILLING DATA

Size and weight

If size or weight will be used to charge customers, legal-for-trade approval may

logistics readers, not PROFINET or EtherNet/IP. Results go over TCP; a gateway is added for a PLC.

WE ASK

WMS and sorter supplier, message format

to pallet stops. Readers sit in guarded frames with their own lighting.

WE ASK

Dock layout and pallet stop positions

apply and must be settled first. For internal checks it is not needed.

WE ASK

What the size and weight data is for

// LIMITS

What vision does not do in a DC

We agree these boundaries before a project starts.

× Needs another method

- **Print quality grading.** Reading confirms content; a GS1 print grade needs a verifier at the printer.
- **Contents of sealed cartons.** Count while the carton is open, or weigh it.
- **RFID tracking.** RFID tags on pallets and assets are a different technology, handled by addanode.
- **Picking and handling.** We do not supply robot picking, palletisers, AMRs, conveyors or sorters.

✓ Works reliably when

- **Items are singulated.** A gap between items, with a trigger for each one.
- **Labels sit on agreed faces.** Fewer allowed faces means fewer readers.
- **No-reads go to manual.** If a station is down, items go to manual handling, not onward unscanned.

// SAMPLES & ACCEPTANCE

What to send for a sample test

We test your own items and labels before proposing a station; quantities and shipping are agreed first. The same items later define acceptance.

Sample preparation guide

Real items
Cartons, totes, polybags or pallets from your normal flow, with their labels as printed.

Hard cases
Torn, creased, faded or film-covered labels, and labels on odd faces, each marked.

Label and data
Label templates, barcode types, and example records of what the warehouse system expects.

Acceptance
No-reads, wrong routes and size or weight mismatches against reference items, counted over an agreed run; challenge items must reach the manual lane.

// MANUAL INSPECTION

Why manual inspection struggles on these lines

Conditions on distribution centres that make checking by eye unreliable over a full shift.

- **Speed.** Conveyors and sorters move items faster than labels can be read by eye, and handheld scanning slows the flow.
- **Many label formats.** Labels from many suppliers, in different layouts and positions, make it hard to check by eye that the right code is on the right item.
- **Glare on film.** Stretch-wrapped pallets and polybags reflect light, so labels under film are hard to read at a glance.
- **Dock conditions.** Daylight through open doors and forklift traffic make close checks at the pallet hurried.

- **Shift fatigue.** Night shifts and repetitive scanning lead to skipped scans and pallets matched to the wrong load.

These are reasons to automate the checks that are defined and visible, and to keep people for judgement and for fixing causes. The guide to manual or camera inspection compares the two.

// LINE SOLUTIONS

Line solutions for logistics and distribution

Complete stations for lines in this industry, each with the HIKROBOT hardware, installation and an indicative installed budget for a typical application in rand, excluding VAT. **All line solutions →**

LINE SOLUTION	FAULTS IT CATCHES	HIKROBOT CONFIGURATION	INDICATIVE BUDGET (EXCL. VAT)
Scan tunnel	Unscanned and no-read items, codes unknown to the WMS, touching items	ID7000 + ID6000 tunnel, dimensioner and scale, WMS over TCP	R 1 210 000 – R 4 150 000
Pallet identification	Missing, unreadable or mismatched SSCC labels; pallets not on the load	ID5000X or ID6000 readers on two sides, WMS match, hold	R 280 000 – R 1 180 000

// FAQ

Logistics and distribution inspection questions

What does machine vision do in a distribution centre?

Mostly it identifies things. Fixed code readers read the barcode on pallets, cartons, totes and parcels where they change hands, at receiving, on conveyors, at sortation and at dispatch, and send each read to the warehouse system or sorter. Cameras add checks such as an open order carton before sealing, and a 3D dimensioner adds size. Anything that cannot be read goes to a manual lane.

What is the difference between a scan tunnel and a barcode verifier?

A scan tunnel reads the code on every moving item and passes the content on; it cannot say whether the print meets the GS1 quality level. A verifier grades a label’s print quality on samples, usually where the label is printed. A DC needs reading; a supplier who wants to avoid rejected deliveries needs both.

Can a camera check SSCC pallet labels before dispatch?

Yes, when pallets stop at a defined position and the labels are on agreed faces. The reader decodes the SSCC, the warehouse system compares it with the pallet expected on that load, and the pallet is held on a mismatch or no-read. Labels placed anywhere on a wrapped pallet are not read reliably.

Why do supplier cartons get turned away at a DC, and can vision help?

Usually because a case or pallet label is missing, carries the wrong content or will not scan. An in-line reader at the supplier’s end of line catches labels that do not decode or carry the wrong content before they ship. Print quality against the GS1 minimum is checked with a verifier, and GS1 South Africa states that many retailers require its barcode test report when a product is listed.

Can dimension and weight data be used to bill customers?

Only after you have confirmed the equipment is approved for that use. Where measured weight or volume is used to charge a customer, legal metrology may require legal-for-trade equipment. We do not claim that approval for any device on this site. For internal use, such as checking carton sizes or planning loads, approval is not the question.

Do the logistics code readers connect to PROFINET or EtherNet/IP?

Not directly. HIKROBOT lists SmartSDK, TCP, serial and FTP for its ID6000 and ID7000 logistics readers, with UDP on the ID7000. Results normally go to the warehouse system or sorter over TCP; where a PLC needs them, a gateway is used.

Can a camera count the items inside a sealed carton or a wrapped pallet?

No. A camera cannot see through board or opaque film, and only the outer faces of a built pallet are visible. Check items while the carton is open, or weigh it; check cases before they are stacked.

Does addaScan supply RFID pallet tracking or robot picking?

No. addaScan reads printed barcodes and labels and checks what is visible to a camera. RFID tagging of pallets and assets is a different technology, handled by our parent company addanode. We do not supply robot picking, palletisers, AMRs, conveyors or sorters; we fit readers and cameras to the equipment you have.

RELATED: Scan tunnel & dimensioning → Carton & pallet verification → Tyre barcode reading → Barcode verification & grading → Choosing a HIKROBOT code reader → PLC & reject integration → All industries →

SOURCES

1. HIKROBOT MV-ID6120PM-00C-NNG logistics code reader (ID6000) (https://www.hikrobotics.com/en/machinevision/productdetail?id=5712) (vendor product page, checked 2026-10-02; protocols listed)
2. HIKROBOT MV-ID7080EM-35F-WHA 8K line-scan logistics code reader (ID7000) (https://www.hikrobotics.com/en/machinevision/productdetail?id=7187) (vendor product page, checked 2026-10-02; protocols listed)

// LOGISTICS & DISTRIBUTION

Request an assessment for your DC or dispatch area

Request a Vision Assessment

Tell us the items, where the labels are, how items are inducted and which system expects the data. We will say which checks apply and what a sample test needs.